

## CLAIMS

### We claim:

- 5 *Para 1* 1. A method of bidding, through a software agent, in online auctions accessible over a communications network, said method including the steps of:
- said agent initially receiving bidding-related information from a bidder;
- said agent initially selecting a plurality of auctions to place bids in, in accordance with said bidding-related information and the current status of one or more auctions, and placing
- 10 bids in said plurality of auctions; and
- said agent, on being outbid in an auction, itself determining, on the basis of said bidding-related information and the current status of one or more auctions, whether to place an additional bid and, if so, selecting an auction to place said additional bid in, and placing said additional bid in said selected auction.
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2. The method according to claim 1, wherein one or more of the auctions in which said agent places bids are located at different online auction sites.
3. The method according to claim 1 or claim 2, wherein the auctions in which said agent
- 20 placed bids are scheduled to close for bidding at the same time.
4. The method according to claim 3, wherein said auctions open for bidding at the same time.
- 25 5. The method according to claim 1 or claim 3, wherein said bidding-related information received from said bidder includes one or more constraints selected from the group consisting of:
- a specified list of auctions to which the agent should restrict participation in;
- specified limits on the values of bids that can be placed by said agent in various
- 30 *auctions*

a specified limit on the number of simultaneously outstanding bids that said agent can have at any time;

a specified limit on the sum of values of all simultaneously outstanding bids that said agent can have at any time; and

5 a specified rule for determining at any time, whether said agent should place additional bids and, if so, in which auctions to place said additional bids.

6. The method according to claim 5, wherein said specified rule includes:

10 selection of an auction for placing a bid in, whether initially or on being outbid, by said agent, is to be such that the current bidder surplus of said bid is maximised and non-negative, wherein said current bidder surplus of said bid comprises a monetary value computed from said bid value and said specified limit on the value of the bid.

7. The method according to claim 5, wherein said specified rule includes:

15 selection of an auction for placing a bid in, whether initially or on being outbid, by said agent, is to be such that the current bidder profitability of said bid is maximised, and non-negative, wherein said current bidder profitability of said bid comprises the ratio of a monetary value computed from said bid value and said specified limit on the value of the bid to said bid value.

20 8. The method according to claim 7, wherein said current bidder profitability of said bid is further required to be greater than a bidder-specified minimum limit.

9. The method according to claim 6 or claim 7, wherein:

25 said auctions are ascending price auctions for selling to bidders;

said specified limits on the values of bids that can be placed by said agent comprise maximum allowable values;

said specified limit on the sum of values of all simultaneously outstanding bids that said agent can have at any time comprises a maximum allowable value; and

30 said current bidder surplus for a bid is computed by said agent by subtraction of a

new computed bid value from the maximum allowable bid value specified by the bidder, for a particular auction.

10. The method according to claim 6 or claim 7, wherein:

5 said auctions are descending price auctions for purchasing from bidders;  
said specified limits on the values of bids that can be placed by said agent comprise minimum allowable values; and

10 said current bidder surplus for a bid is computed by said agent by subtraction of a minimum allowable bid value specified by the bidder from a new computed bid value, for a particular auction.

11. A method of conducting online auctions, said method including the steps of:

15 arranging offerings for auction in one or more selected groups;  
constraining all of said auctions within the same group from said one or more selected groups to close for bidding simultaneously; and

20 soliciting bids in one or more of said auctions by software agents representing bidders, said software agents determining at any time, on the basis of bidding-related information input by a bidder and the current status of one or more auctions, whether to place an additional bid and if so, selecting the auction to place the bid in and placing the bid in said selected auction.

12. A system for bidding, through a software agent, in online auctions accessible over a communications network, including:

25 means for inputting bidding-related information from a bidder; and supporting said agent, wherein said agent initially selects a plurality of auctions to place bids in, in accordance with said bidding-related information and the current status of one or more auctions, and places bids in said plurality of auctions;

said agent, on being outbid in an auction, itself determines, on the basis of said bidding-related information and the current status of one or more auctions, whether to place

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an additional bid, and, if so, selects an auction to place said additional bid in, and places said additional bid in said selected auction.

13. The system according to claim 12, wherein one or more of the auctions in which said agent places bids are located at different online auction sites.

14. The system according to claim 12 or claim 13, wherein the auctions in which said agent places bids are scheduled to close bidding at the same time.

15. The system according to claim 14, wherein said auctions open for bidding at the same time.

16. The system according to claim 12 or claim 14, wherein said bidding-related information input by said bidder includes one or more constraints selected from the group consisting of:

- a specified list of auctions to which the agent should restrict participation in;
- specified limits on the values of bids that can be placed by said agent in various auctions;
- a specified limit on the number of simultaneously outstanding bids that said agent can have at any time;
- a specified limit on the sum of values of all simultaneously outstanding bids that said agent can have at any time; and
- a specified rule for determining at any time, whether said agent should place additional bids and, if so, in which auctions to place said additional bids.

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17. The system according to claim 16, wherein said specified rule includes:  
selection of an auction for placing a bid in, whether initially or on being outbid, by said agent, is to be such that the current bidder surplus of said bid is maximised and non-negative, wherein said current bidder surplus of said bid comprises a monetary value computed from said bid value and said specified limit on the value of the bid.

18. The system according to claim 16, wherein said specified rule includes:  
selection of an auction for placing a bid in, whether initially or on being outbid, by  
said agent, is to be such that the current bidder profitability from said bid is maximised and  
5 non-negative, wherein said current bidder profitability of said bid comprises the ratio of a  
monetary value computed from said bid value and said specified limit on the value of the bid  
to said bid value.

19. The system according to claim 18, wherein said current bidder profitability of said bid  
10 is further required to be greater than a bidder-specified minimum limit.

20. The system according to claim 17 or claim 18, wherein:  
said auctions are ascending price auctions for selling to bidders;  
said specified limits on the values of bids that can be placed by said agent comprise  
15 maximum allowable values;  
said specified limit on the sum of values of all simultaneously outstanding bids that  
said agent can have at any time comprises a maximum allowable value; and  
said current bidder surplus for a bid is computed by said agent by subtraction of a  
new computed bid value from the maximum allowable bid value specified by the bidder, for a  
20 particular auction.

21. The system according to claim 17 or claim 18, wherein:  
said auctions are descending price auctions for purchasing from bidders;  
said specified limits on the values of bids that can be placed by said agent comprise  
25 minimum allowable values; and  
said current bidder surplus for a bid is computed by said agent by subtraction of a  
minimum allowable bid value specified by the bidder from a new computed bid value, for a  
particular auction.

30 22. A system for conducting online auctions, including:

computing means for arranging offerings for auction in one or more selected groups;  
computing means for constraining all of said auctions within the same group from the  
said one or more selected groups to close for bidding simultaneously; and

computing means for soliciting bids in one or more of said auctions by software  
agents representing bidders, said software agents determining at any time, on the basis of  
bidding-related information input by a bidder and the current status of one or more auctions,  
whether to place an additional bid and, if so, selecting the auction to place the bid in and  
placing the bid in said selected auction.

23. A computer program product comprising a computer readable medium having a  
computer program recorded therein for bidding, through a software agent, in online auctions  
accessible over a communications network, said computer program including:

computer program code means for said agent initially to receive bidding-related  
information from a bidder;

computer program code means for said agent to initially select a plurality of auctions  
to place bids in, in accordance with said bidding-related information and the current status of  
one or more auctions, and to place bids in said plurality of auctions; and

computer program code means for said agent, on being outbid in one or more  
auctions, itself to determine, on the basis of said bidding-related information and the current  
status of one or more auctions, whether to place an additional bid and, if so, to select an  
auction to place said additional bid in, and to place said additional bid in said selected auction.

24. The computer program product according to claim 23, wherein one or more of the  
auctions in which said agent places bids are located at different online auction sites.

25. The computer program product according to claim 23 or claim 24, the auctions in which  
said agent places bids are scheduled to close for bidding at the same time.

26. The computer program product according to claim 25, wherein said auctions open for  
bidding at the same time.

27. The computer program product according to claim 23 or claim 25, wherein said bidding-related information received from said bidder includes one or more constraints selected from the group consisting of:

- 5 a specified list of auctions to which the agent should restrict participation in;  
specified limits on the values of bids that can be placed by said agent in various auctions;  
a specified limit on the number of simultaneously outstanding bids that said agent can have at any time;
- 10 a specified limit on the sum of values of all simultaneously outstanding bids that said agent can have at any time; and  
a specified rule for determining at any time whether said agent should place additional bids and, if so, in which auctions to place said additional bids.

15 28. The computer program product according to claim 27, wherein said specified rule includes:

selection of an auction for placing a bid in, whether initially or on being outbid, by said agent, is to be such that the current bidder surplus of said bid is maximised and non-negative, wherein said current bidder surplus of said bid comprises a monetary value  
20 computed from said bid value and said specified limit on the value of the bid.

29. The computer program product according to claim 27, wherein said specified rule includes:

selection of an auction for placing a bid in, whether initially or on being outbid, by  
25 said agent, is to be such that the current bidder profitability of said bid is maximised and non-negative, wherein said current bidder profitability of said bid comprises the ratio of a monetary value computed from said bid value and said specified limit on the value of the bid  
to said bid value.

30 30. The computer program product according to claim 29, wherein said current bidder

profitability of said bid is further required to be greater than a bidder-specified minimum limit.

31. The computer program according to claim 28 or claim 29, wherein:

said auctions are ascending price auctions for selling to bidders;

5 said specified limits on the values of bids that can be placed by said agent comprise maximum allowable values;

said specified limit on the sum of values of all simultaneously outstanding bids that said agent can have at any time comprises a maximum allowable value; and

10 said current bidder surplus for a bid is computed by said agent by subtraction of a new computed bid value from the maximum allowable bid value specified by the bidder, for a particular auction.

32. The computer program product according to claim 28 or claim 29, wherein:

said auctions are descending price auctions for purchasing from bidders;

15 said specified limits on the values of bids that can be placed by said agent comprise minimum allowable values; and

said current bidder surplus for a bid is computed by said agent by subtraction of a minimum allowable bid value specified by the bidder from a new computed bid value, for a particular auction.

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33. A computer program product comprising a computer readable medium having a computer program recorded therein for conducting online auctions, said computer program including:

25 computer program code means for arranging offerings for auction in one or more selected groups;

computer program code means for constraining all of said auctions within the same group from said one or more selected groups to close for bidding simultaneously; and

computer program code means for soliciting bids in one or more of said auctions by software agents representing bidders, said software agents determining at any time, on the

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basis of bidding-related information, input by a bidder and the current status of one or more auctions, whether to place an additional bid and, if so, selecting the auction to place the bid in and placing the bid in said selected auction.

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